

**Complete size characterization of diatomaceous earth**  
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**Abstract**

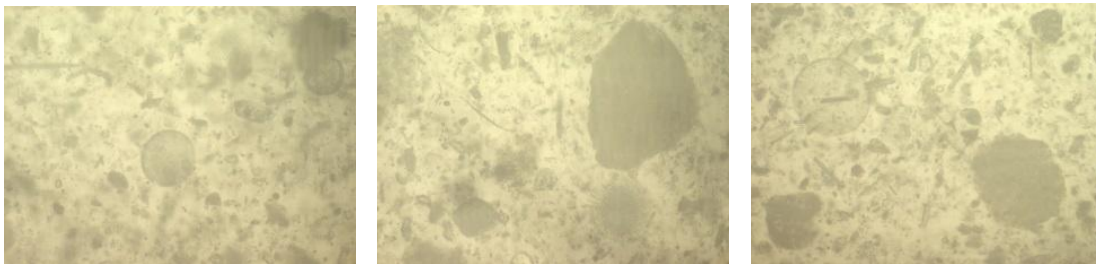
Diatomaceous earth is commonly used in many manufacturing and production processes as a filtering agent. Its exceptional textural properties makes it a very interesting natural material for several defense and environmental applications such as pest control and water treatment. The quality of the diatomaceous earth greatly affects the effectiveness of the filter. One of the primary characteristics of determining diatomaceous earth quality is particle size. Traditional methods, like using sieves, can be tedious and may not offer enough information to completely characterize the material. Automated sizing techniques, such as sedimentation analysis or static light-scattering, are limited in scope since diatomaceous earth is not a uniform material, but a composite of shapes, sizes, densities, and colors. To completely characterize the particle size of diatomaceous earth, dynamic image analysis and dynamic light scattering (DLS) analysis are used to compliment to each other to accomplish this goal. Dynamic image analysis uses shape factors to collect size data in the micron range while DLS is used to determine the size of nanoparticles that remain suspended in the medium. Testing is performed on two types of diatomaceous earth commonly used in the beer brewing industry.

**References**

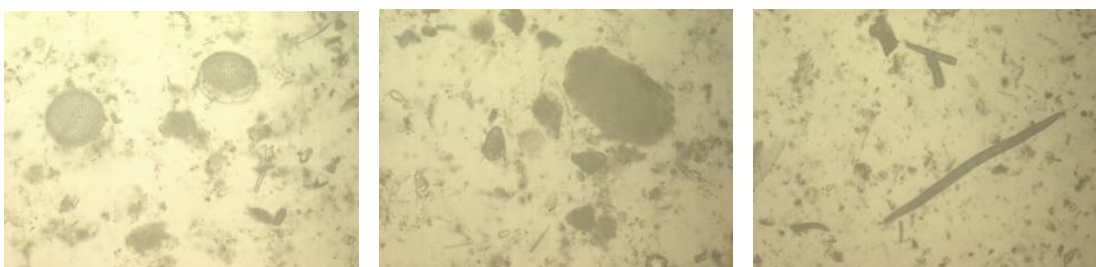
[1] Jack G. Saad. Associate Scientist. Micromeritics Instrument Corporation.

Images of two different grades of Diatomaceous earth: DE2 and DE3. Source: High definition camera

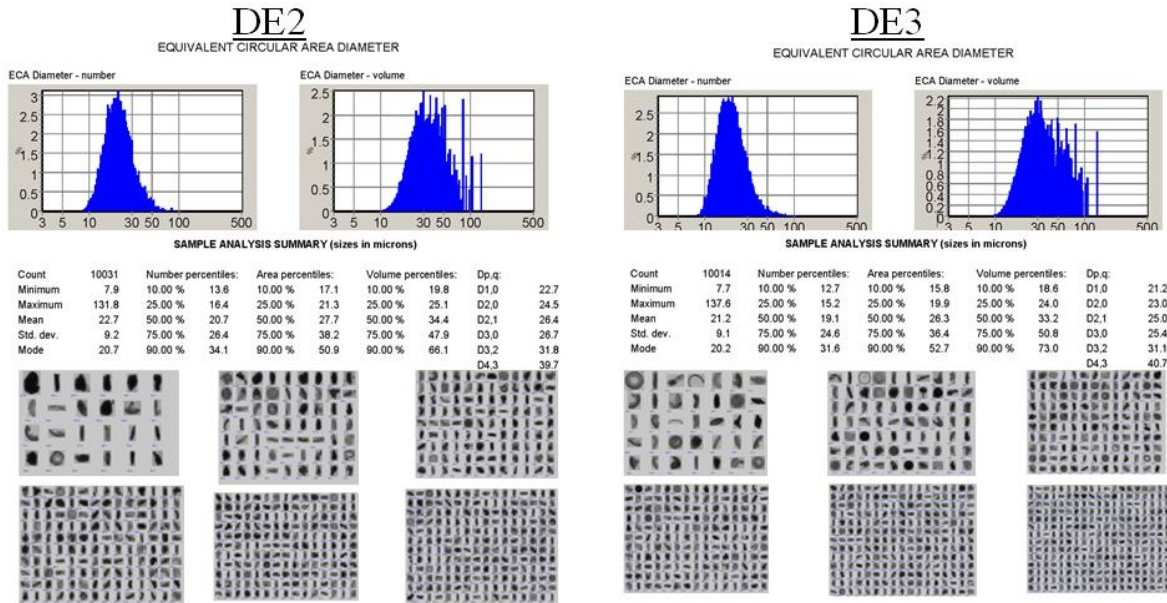
**DE2**



**DE3**



## Dynamic Image Analysis



## Dynamic Light Scattering

